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The Impact of Retirement on Subjective Well-Being

Emily Rider
Union College - Schenectady, NY

THE IMPACT OF RETIREMENT ON SUBJECTIVE WELL-BEING

by

Emily W. Rider

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ABSTRACT

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Using cross-sectional data from the Behavioral Risk Factor Surveillance System and the American Time Use Survey Well-Being Module, this paper looks at how retirement affects one's subjective well-being. The retirement-consumption puzzle indicates that at retirement individuals discover they have fewer economic resources than they had anticipated prior to retirement. As a consequence they reduce consumption, which contradicts the prediction of consumption smoothing based on the life-cycle model of consumption. But at the same time people have more time for leisure and home production after retirement. How does this tradeoff between consumption and leisure after retirement affect an individual's subjective well-being, such as life satisfaction, U-index, net affect, and meaningfulness? This paper controls for age, race, education, marital status, and income in analyzing an individual's subjective well-being before and after retirement. I find that retirement has a negative effect on one's subjective well-being. However, after correcting for endogeneity of retirement, it turns out that retirement actually does not affect one's subjective well-being.

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CHAPTER ONE

INTRODUCTION

A. Retirement-Consumption Puzzle

Typically people work hard throughout their careers and financially plan in order to have an enjoyable retirement. For many, retirement causes a sudden change in behavior, decisions, and actions. People no longer need to incorporate as much transportation, gas, food, work clothing, etc. costs into their budgets as they do not go into work each and every day. Also as a result of retirement, people realize that they have more leisure time, having more time to produce home goods which in many cases, also leads to a sudden decrease in consumption. This however contradicts the life-cycle model of consumption in that consumption and savings are typically planned out and are consistent and continuous over the long term for individuals. This has been known as the Retirement-Consumption Puzzle.

B. Importance of Analyzing Well-Being

Retirement also can have a major impact on a person's outlook on life and on his or her own well-being. Daily activities typically change as a retired individual no longer has to spend long days in the office or in rush-hour traffic stressing about what needs to be accomplished in the upcoming days. People substitute this time with new and old hobbies which can alter their feelings of happiness, stress, depression, etc. However, how these changes in daily life affect one's perception of their own well-being after retirement varies. In this paper, I wish to discover how retirement affects

people's subjective well-being. I predict that retirement will have a positive effect on an individual's subjective well-being as people have more leisure time to participate in hobbies and activities that they enjoy during their retirement.

By understanding how retirement affects one's subjective well-being, economists can appropriately implement policies involving employment and Social Security, bettering the welfare of people and the economy. Economists will also be able to better understand the smoothing of consumption and overall well-being over a lifetime.

C. Contribution of this Paper

Various measures of subjective well-being have been used by other researchers to evaluate retirement's effect on subjective well-being. Some of these measures include life satisfaction, loneliness, happiness, and depression. Contrary to existing literature, this paper uses additional time-use based measures, U-index and net affect, to help fully understand the effect of retirement on well-being. After addressing the issue of endogeneity with retirement, I find that retirement does not have a significant impact on an individual's subjective well-being, contrary to my hypothesis.

D. Organization of Paper

In the next chapter the existing literature involving retirement and subjective well-being are reviewed. It discusses previous research findings about the retirement-consumption puzzle, retirement expectations, the increase in home production as a result of retirement, and the importance of including certain independent variables to

measure retirement's overall impact on well-being. Then, there are descriptions of the datasets, and the econometric model is presented along with descriptions of the dependent and independent variables. Afterwards, the regression results are analyzed and then overall conclusions are made.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, I review the previous literature on retirement and well-being. By looking at the retirement-consumption puzzle and retirement expectations, changes in home production, and effects of retirement on well-being, I set the stage for the analysis going forward.

A. Retirement-Consumption Puzzle and Retirement Expectations

As people get older and retire, they tend to change their consumption behaviors. As a result of retirement, people find that they do not have as many economic resources as they did before, and therefore experience a decrease in consumption. However, this does not fall in line with the life-cycle hypothesis that individuals plan their consumption behavior so that it remains stable over time. This, as mentioned earlier, has become known as the "retirement-consumption puzzle."

People often predict their changes in consumption expenditures, but are these predictions correct? Hurd and Rohwedder (2003) analyze the difference between an individual's anticipated and actual change in spending during retirement. They find that the average anticipated decline in consumption is actually more than the actual decline.

Besides differences in consumption expectations, often the reality of retirement also differs from people's expectations. Goyer (2013) who analyzes baby boomers' retirement discovers that 76% of baby boomers found retirement to be what they expected. For the rest who thought otherwise, the main reason was due to their state of

health. Also, about 6% of baby boomers expected an increase in their standard of living post-retirement, when in reality, 18% of them actually experienced this increase. Therefore, people seem to be surprised by the amount of resources that they actually have during retirement.

B. Home Production

The decrease in consumption expenditures mentioned earlier can be linked with the increase in home production. Hurst (2008) finds that food and work related expenses fell post retirement. Due to the increase in "free time," food related expenses fell due to substitution of market expenditures for home production. Expenditures such as gas, transportation, clothes, etc. also decreased as a result of the retired individual's change in daily routine: since they do not need to go into work anymore, they do not incur these costs as frequently. Hurst (2008) also finds that the decline in expenditures after retirement for the wealthy, and for the 2nd and 3rd quartile, were very similar. The less fortunate's expenditures, however, decreased significantly more after retirement.

Stancanelli and Van Soest (2012) argue that in order to evaluate home production, analyzing how retirement affects each person in a partnership is crucial. Using the French Time Use Survey, they find that own retirement increases a husband and wife's hours of housework significantly. A one hour drop in market work increases housework for men by 26 minutes and for women by 19 minutes. Total housework for the male increases 4 hours on the weekdays; however, the woman retiring does not follow a similar effect. Due to pension eligibility, they find that the probability of retirement is discontinuous at age 60. To overcome endogeneity, Stancanelli and Van

Soest utilize a regression discontinuity approach. They incorporate dummy variables to account for whether a person is over 60 or not.

C. Retirement and Well-Being

Charles (2004), using the Health and Retirement Study, analyzes how retirement affects overall well-being. He uses feelings of depression and loneness as measures of well-being. At first, Charles finds that retirement has a negative impact on well-being. However, after correcting for endogeneity by incorporating Social Security eligibility ages as instrumental variables, he finds that retirement has a positive impact on one's well-being. Throughout his analysis he also looks at the psychological effects of retirement. He finds that the less educated are more depressed during their retirement. It was also found that marriage helps decrease feelings of depression and loneliness. Therefore, independent variables such as education and marital status are crucial when analyzing retirement's effect on one's subjective well-being.

Bonsang and Klein (2012) also research how retirement affects well-being. They use the German Socio-Economic Panel and break retirement down into those whose retirement was voluntary and those whose retirement was involuntary and observe their impact on life satisfaction, satisfaction with income, satisfaction with health, and satisfaction with free time. After correcting for endogeneity, they find that retirement for those who retired voluntary has no significant effect on life satisfaction. However, those who involuntarily retire experience a significant decrease in life satisfaction.

Overall, people seem to be happy with their retirement. Moen, Erickson, Argarwal, Fields and Todd (2000) report that retired people are more likely to be completely satisfied with their lives than those who are still working. Goyer (2013) finds that in 2012, 93% of the retired baby boomers are currently enjoying their retirement.

Using data from the Behavioral Risk Factor Surveillance System and the American Time Use Survey Well-Being Module, this paper looks at how retirement affects one's subjective well-being. Touching upon the previous literature, I establish similar independent variables; however, I include new measures of subjective well-being, U-index and net affect, which are based on time use data.

CHAPTER THREE

ECONOMETRIC MODEL AND DATA DESCRIPTIONS

This chapter provides a description of the datasets used, presents the econometric model, describes the dependent and independent variables used, and analyzes their descriptive statistics.

A. Dataset Descriptions

One dataset used in this paper is the 2010 Behavioral Risk Factor Surveillance System (BRFSS). The data extracted from the BRFSS is cross-sectional. The BRFSS conducted telephone interviews, gathering information about current health-related perceptions, conditions, and behaviors of the respondents. These calls were made seven days per week each month to individuals 18 years of age and older. Within this data set includes questions such as, "In general, how satisfied are you with your life?" Respondents can answer with very satisfied, satisfied, dissatisfied, or very dissatisfied. The responses to this question help determine one measure of subjective well-being—global life satisfaction.

The American Time Use Survey Well-Being (ATUS WB) Module helps determine other measures of subjective well-being such as U-index, net affect, and meaningfulness. The data arising from this module is cross-sectional. The ATUS WB Module was conducted from January to December of 2010. This survey collects detailed information about the activities that the respondent participated in the day before the interview. These activities must last at least five minutes long and cannot

include activities such as sleeping, grooming, personal activities, don't know/can't remember, and refusal/none of your business. Three of the reported activities from each respondent were randomly selected and seven questions were asked about the quality of life involving the activities. Five affect questions addressed how the respondent felt during each activity. One of the affect questions asked how happy the respondent was during the activity. The respondent could answer with an integer between zero and six, six indicating that he or she was very happy. The remaining affect questions asked how tired, stressed, sad, and how much pain was felt during the reported activities. The answers follow a similar scale as the question involving happiness. Another question asked was how meaningful the activity was. The respondent could also answer with an integer between zero and six, six indicating that the activity was very meaningful. The responses to this question are used as another measure of subjective well-being—meaningfulness.[1] Demographic information such as sex, race, age, education, marital status, and income are included for the respondents in this survey; all of which are crucial independent variables to explore in the econometric model explaining how retirement affects one's subjective well-being.

[1] The last question asked was if the respondent was interacting with anyone during the activity, including on the phone. The respondents could answer with either yes or no. After initially thinking that controlling for this would be necessary, it turns out that this interaction variable is endogenous and therefore it is not included. Another variable that ends up being endogenous is health. Within this dataset, there are no appropriate instruments to correct this issue, so respondent's health status is also not included.

B. Econometric Model

In order to fully evaluate the impact of retirement on subjective well-being, age, race, marital status, education, and income must be controlled for. The econometric equation is:

$$
\begin{aligned}
&WellBeing \\
&= \beta_0 + \beta_1 Retired + \beta_2 Age + \beta_3 AgeSquared + \beta_4 Black + \beta_5 Hispanic \\
&+ \beta_6 Other + \beta_7 SomeHighSchool + \beta_8 HighSchool + \beta_9 SomeCollege + \beta_{10} College \\
&+ \beta_{11} Married + \beta_{12} Divorced + 13 Widowed + \beta_{14} Separated + \beta_{15} Partner \\
&+ \beta_{16} IncomeMissing + \beta_{17} Income1020 + \beta_{18} Income2035 + \beta_{19} Income3550 \\
&+ \beta_{20} Income5075 + \beta_{21} Income75100 + \beta_{22} Income100150 + \beta_{23} Income150 + \varepsilon
\end{aligned}
$$

Where ε is the error term and ß are the coefficient estimates.

C. Description of Variables

The four dependent variables that are used to measure subjective well-being are global life satisfaction, U-index, net affect, and meaningfulness. Global life satisfaction arises from the BRFSS and is measured on a scale 1 to 4 of how satisfied one is with his or her life. U-index is derived from data within the ATUS WB Module. Based on the reported activities of an individual, U-index measures the fraction of the time the respondent spends in an unhappy state as a result of the activity. The value is therefore between zero and one. Net affect is the weighted average of the difference between the positive emotions minus the average of the negative arising from each activity in the ATUS WB Module. Meaningfulness, also arising from ATUS WB data, is the weighted

average of how meaningful each of the three randomly selected reported activities were to the respondent.[2]

The independent variables in the econometric model are explained below.

Independent Variables

Retired	Endogeneous Dummy Variable that indicates whether an individual is retired
Age	Variable that indicates the respondent's age
AgeSquared	Variable that is the square of the respondent's age
White	Dummy Variable that indicates whether an individual is White (Reference Category)
Black	Dummy Variable that indicates whether an individual is Black
Hispanic	Dummy Variable that indicates whether an individual is Hispanic
Other	Dummy Variable that indicates whether an individual is neither White, Black, or Hispanic
Elementary	Dummy Variable that indicates whether an individual has not completed elementary school (Reference Category)
SomeHighSchool	Dummy Variable that indicates whether an individual has not completed high school
HighSchool	Dummy Variable that indicates whether an individual has completed high school
SomeCollege	Dummy Variable that indicates whether an individual has completed some college
College	Dummy Variable that indicates whether an individual has completed college or greater
Single	Dummy Variable that indicates whether an individual is single (Reference Category)
Married	Dummy Variable that indicates whether an individual is married
Divorced	Dummy Variable that indicates whether an individual is divorced
Widowed	Dummy Variable that indicates whether an individual is widowed
Separated	Dummy Variable that indicates whether an individual is Separated

[2] Note that any variance in the ATUS WB Module subjective well-being measures could be a result of the differences in the duration of an activity.

Partner	Dummy Variable that indicates whether an individual has a partner
IncomeMissing	Dummy Variable that indicates whether an individual's income is Missing or Unknown
Income10	Dummy Variable that indicates whether an individual's income is Less than $10,000 (Reference Category)
Income1020	Dummy Variable that indicates whether an individual's income is between $10,000 and $20,000
Income2035	Dummy Variable that indicates whether an individual's income is between $20,000 and $35,000
Income3550	Dummy Variable that indicates whether an individual's income is between $35,000 and $50,000
Income5075	Dummy Variable that indicates whether an individual's income is Between $50,000 and $75,000
Income75100	Dummy Variable that indicates whether an individual's income is Between $75,000 and $100,000
Income100150	Dummy Variable that indicates whether an individual's income is Between $100,000 and $150,000
Income150	Dummy Variable that indicates whether an individual's income is Above $150,000

** Note that ATUS WB Module income categories differ by dollar amounts and relationship status categories differ

When using well-being measures U-index, net affect, and meaningfulness which are derived from the ATUS WB Module, holidays are controlled for. Some respondents reported their activities that fell on a holiday (with the exception of Christmas and Thanksgiving) while the majority did not. This obviously can distort the regression results as typically holidays can bring greater happiness to people.

Within the model, there is an issue of endogeneity to address. People who are depressed or have health issues, and therefore have a lower state of well-being, could be more inclined to retire earlier. This is an issue of reverse causation. Retirement is

correlated with the error term and is therefore endogenous. To overcome the endogenous effect of retirement on well-being, instrumental variables must be incorporated into the econometric model. Since Social Security eligibility age is highly correlated with the independent variable retirement, but not the overall well-being of an individual, incorporating age dummy variables where there are Social Security incentives as an instrumental variable in the econometric model will allow for the exogenous effect of retirement on well-being to be evaluated. This issue of endogeneity is further addressed in the next chapter of this paper.

In the ATUS Well-Being Module data, there is not one field for the respondent to say whether or not he is retired. Therefore, based on a combination of questions within the dataset, I define retired as those who state that they are out of the labor force or those who have not done any work for pay or profit within the past seven days, even if it was not a result of them being retired. To obtain a more accurate sample, those who reported that they are "disabled" or "unable to work" are dropped as they do not reflect those who are either retired or still working. For similar reasons in the BRFSS dataset, those who are reported as a "homemaker", a "student", or "unable to work" are dropped.

The sample used in this paper contains males between the age of 50 and 70 in both datasets. Males outside this age range are eliminated as I am looking at how retirement affects subjective well-being, and 50 to 70 years old is when most individuals retire and also partake in similar activities. Observations were kept only if the respondents had answered every data question for all variables I am controlling for.

Therefore, when using the BRFSS data, there are 66,375 observations and when using the ATUS data there are 5,241 observations.

Tables 1 and 2 show the descriptive statistics for the BRFSS and ATUS WB Module variables. In Table 1, the mean for global life satisfaction, on a scale of 1 to 4, is 3.45 indicating that on average people are satisfied to very satisfied with their lives. In Table 2, the mean of U-index is 0.17, indicating that people spent most of their time in a pleasant state on average during their three activities. The mean of net affect, which can range from -6 to 6, is 3.16, indicating that on average people experience more positive emotions as a result of their three reported activities. The last dependent variable, meaningfulness which ranges from 0 to 6, has a mean of 4.35 which implies that the three reported activities were on average quite meaningful to the respondents. Overall, the means for all four dependent variables seem to be quite positive in terms of well-being.

As shown in Table 1, the average age of respondents is about 60 years old, 85 percent of them being white while with the ATUS statistics in Table 2, the average age is similar at 59, but only 70 percent are white. In the ATUS module, 43 percent of the people between the ages of 50 and 70 are retired, but only 36 percent are in the BRFSS.

CHAPTER FOUR

EMPIRICAL RESULTS

This chapter analyzes the regression results for the dependent variables global life satisfaction, U-index, net affect, and meaningfulness and compares the results to those of previous literatures.

A. The Effect of Retirement on Global Life Satisfaction

The coefficients for the independent variables regressed with global life satisfaction as a dependent variable are presented in columns 1 and 2 of Table 3. Column 1 contains the OLS regression estimates, while column 2 contains the Instrumental Variable (IV) regression estimates. The accompanying first-stage results are presented in column 3. Looking at the OLS regression, retirement has a negative but insignificant effect on life satisfaction. After correcting for endogeneity, retirement is still insignificant, but is positive.

To correct for endogeneity, dummy variables are included for ages 62 and 65 where there are spikes in the amount of people who retire due to Social Security incentives. Age 62 and 65 dummy variables are highly correlated with retirement, but not with the dependent variable, making them suitable instruments. Age 62 is used because this is the age when anyone can first start collecting Social Security. However, retiring before the appropriate full retirement age reduces one's monthly benefits. For example, if someone's full retirement age is 67 and they retire at 64, they only receive 80 percent of the monthly benefits and if they retire at age 66, they only receive 93.3

percent of the monthly benefits, and so on. Table 4 illustrates the full retirement ages for those included in the sample—individuals between ages 50 and 70.[3]

Looking further at the results in columns 1 and 2, marriage seems to have a significant effect on life satisfaction. Consistent with what I expected, married people, compared with single people as the reference group, are more satisfied with their lives. On average, their satisfaction level increases by 0.22 if they are married. Even people who have been married but are now divorced are on average more satisfied with their lives. Looking at both the OLS and the IV regressions, it is clear that people with a higher amount of income are on average more satisfied with their lives which is also consistent with my predictions. The IV regression results indicate that people whose income is over $50,000's global life satisfaction is 0.52 higher than those whose income is less than $15,000.

B. The Effect of Retirement on U-Index

The regression results with U-index as the dependent variable are presented in Table 5 columns 1 and 2. Column 1 displays the OLS regression results and column 2 contains the IV regression results. The first-stage results for each dependent variable arising from the ATUS data are the same and are presented in column 3. The coefficient for retired using the OLS regression indicates that people who are retired spend more time in an unpleasant state. Age 62 and 65 dummies are used once again to

[3] I tried using age 66 as one of the instruments as there is a greater range of people that reach full retirement age compared with those with a retirement age of 65 as shown in Table 4, but found it to be insignificant. This is potentially due to the fact that the full retirement age has been gradually changing from 65 over the years. Within both datasets the retirement probability spiked at age 65 even though it should have spiked at age 66.

correct for endogeneity. Looking at the first stage results, both age dummies are significant and positive, making them suitable instruments. After correcting for endogeneity, the coefficient for retired becomes negative but insignificant indicating that retirement does not have a significant effect on the amount of time the respondent spent in an unpleasant state.

Looking further at the regression results in column 2, education has a significant impact on the percentage of time a person spends in an unpleasant state. Higher educated people spend much less time in an unpleasant state than those who have just completed elementary school, as I expected. For example, those who have completed college or higher spend on average 12 percent less time in an unpleasant state compared with those who have just completed elementary school. Marital status affects well-being in a similar manner as it did with the BRFSS data. Those who are married or have a partner spend less time in an unpleasant state than single people. On average, married people spend about 9 percent less time and people with a partner spend 14 percent less time in an unpleasant state than single people do. It is also found that income has an impact on the fraction of time a respondent spends in an unpleasant state. The Instrumental Variable results for income are insignificant, but looking at the OLS results, on average, those who have a higher income spend less time in an unpleasant state than those who have incomes lower than $10,000. However, I expected that those in the highest income category, over $150,000, would spend the least amount of time in an unpleasant state, yet this is not the case as shown in Column 1. Those with even incomes between $35,000 and $50,000, on average, spend less amount of time in an unpleasant state.

C. The Effect of Retirement on Net Affect

Table 6 displays the regression results with the dependent variable, net affect. Column 1 shows the OLS regression results, Column 2 the Instrumental Variable regressions results, and Column 3 of Table 5 the first-stage results. Looking at Column 1, before correcting for endogeneity, those who are retired experienced less positive emotion with their activities than those who are not retired. However, as shown in Column 2, the Instrumental Variable regression results indicate that retirement actually has no effect on net affect.

Other independent variables do in fact have an impact on net affect. For example, the older the respondent, the less amount of positive emotion they experienced during their three reported activities. Also, shown in Columns 1 and 2, respondents whose race is reported black, had a greater amount of positive emotion. Those who are married or have a partner have a higher net affect than those who are single. This state of higher well-being as a result of being in a relationship is consistent with what was found when regressing against previous states of well-being. The OLS regression results in Column 1 indicate that higher levels of income have a positive effect on net affect compared to those with incomes under $10,000. Similarly with U-index as a dependent variable, those with incomes between $35,000 and $50,000 have a greater state of well-being than other income levels. However, similarly with U-index as the dependent variable, once correcting for endogeneity, income's effect on net affect becomes insignificant.

D. The Effect of Retirement on Meaningfulness

The last variable that is used to measure well-being, meaningfulness, has regression results that are presented in Table 7. Column 1 shows the OLS regression results, Column 2 presents the Instrumental Variable regression results, and Column 3 of Table 5 presents the first-stage results. Once again, in the OLS estimation, retirement is significant has a negative impact on meaningfulness. However after the issue of endogeneity is corrected for, retirement has an insignificant effect on meaningfulness.

In Columns 1 and 2 of Table 7, age is significant and negative, indicating that the older the respondent, the less meaningful the three activities were to them, on average. Also, race turns out to have a significant impact on meaningfulness: those who are black, Hispanic, or other, said that the activities are more meaningful to them, compared with whites. Relationship status still has in impact on subjective well-being. Those who are married or have a partner reported that their activities were more meaningful to them compared with those who are single. In this case, income does not seem to be significant as it was with other measures of well-being.

E. Comparing Results to Existing Literature

As shown above, I find that retirement does not have a significant impact on life satisfaction. This is consistent with what Bonsang and Klein (2012) find. They also use an Instrumental Variable regression, and to correct for endogeneity, use measures of income and retirement benefit ages as instruments. One overall finding that Bonsang

and Klein discuss is that those who live in a couple tend to be more satisfied with their lives, which is what I find when regressing with all dependent variables.

Contrary to what I find, Charles (2004) finds that retirement actually does have a positive impact on well-being after correcting for endogeneity. Charles similarly uses an Instrumental Variable regression and also uses ages where there are Social Security incentives as instruments. Also, Charles does find that higher education levels and married people do have a positive effect on measures of well-being, which is what I find.

Contrary to both Charles and Bonsang and Klein, I do not incorporate health into my analysis as it is endogenous. However, in addition to life satisfaction, I analyze retirement's effect on the U-index, net affect, and meaningfulness of activities to get a better estimate of well-being—something these previous papers did not incorporate.

CHAPTER FIVE

CONCLUSION

In this chapter I provide a summary of my findings, touch upon policy implications arising from the results, address limitations within the analysis, and provide suggestions for future research.

A. Summary of Findings

Using cross-sectional data from the Behavioral Risk Factor Surveillance System and the American Time Use Survey Well-Being Module, this paper looks at how retirement affects one's subjective well-being. Unlike previous literature involving retirement and well-being, this paper includes new well-being measures of U-index and net affect. Initial regression results indicate that retirement has a negative correlation with positive subjective well-being. However after correcting for endogeneity, contrary to my hypothesis, I find that retirement actually has no significant impact on an individual's subjective well-being. Other independent variables, especially marital status, education, and income, however do turn out to have significant impacts on most measures of subjective well-being.

B. Policy Implications

It is important that economists study how retirement affects an individual's subjective well-being in order to make important policy decisions involving Social Security, other retirement benefits, education, and even health care. The life-cycle

model of consumption is consistent with my findings. I find that subjective well-being does not decrease as a result of retirement. Therefore, there is no need for government intervention to increase Social Security, other payments and benefits, etc. as a result of retirement.

C. Limitations

There are a few limitations within the data that should be addressed. In both datasets, only males were looked at; however, there could exist trends in females involving retirement behavior that could be worth investigating. Another limitation is that only three activities were randomly selected for each respondent in the ATUS Well-Being Module, causing a potentially uneven distribution of activity types. Also, within both datasets, there is no way for the respondent to indicate whether their retirement was voluntary or involuntary. Controlling for involuntary vs voluntary retirement could change the effects of retirement on one's subjective well-being.

D. Suggestions for Future Research

After reading numerous papers and researching on my own, I have come across a couple of suggestions for future research. I think that well-being of those who involuntarily retired should be analyzed further as I believe that there will be a significant difference compared with those whose retirement is voluntary. These results could potentially lead to policy changes involving involuntary retirement. Another suggestion I have is to incorporate various family factors as independent variables in the model. For example, the number of children living with the respondents could have a

significant impact on their subjective well-being. Finally, I suggest studying how retirement planning affects the well-being of those after retirement. Do those who spend years with financial advisors planning for retirement have greater subjective well-being during retirement than those who do not?

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Table 1: Descriptive Statistics for BRFSS Global Life Satisfaction

Variables	Mean	Standard Dev	Minimum	Maximum
Global Life Satisfaction	3.45	(0.60)	1	4
Retired	0.36	(0.48)	0	1
Age (years)	59.98	(5.90)	50	70
Race/Ethnicity				
White	0.85	(0.35)	0	1
Black	0.06	(0.23)	0	1
Hispanic	0.04	(0.20)	0	1
Other	0.05	(0.22)	0	1
Education Level				
Elementary	0.02	(0.14)	0	1
Some High School	0.04	(0.19)	0	1
High School	0.26	(0.44)	0	1
Some College	0.26	(0.44)	0	1
College	0.42	(0.49)	0	1
Marital Status				
Married	0.69	(0.46)	0	1
Divorced	0.15	(0.36)	0	1
Widowed	0.04	(0.19)	0	1
Separated	0.01	(0.12)	0	1
Single	0.08	(0.28)	0	1
Partner	0.02	(0.12)	0	1
Income Level				
Less than 15K	0.05	(0.22)	0	1
15K-25K	0.11	(0.32)	0	1
25K-35K	0.10	(0.30)	0	1
35K-50K	0.15	(0.36)	0	1
Over 50K	0.51	(0.50)	0	1
Income Missing	0.08	(0.27)	0	1
Number of Observations		66375		

Note: The reported values are the unweighted means. Standard deviations are reported in parentheses.

Table 2: Descriptive Statistics for ATUS Variables

Variables	Mean	Standard Dev	Minimum	Maximum
U-Index	0.17	(0.32)	0	1
Net Affect	3.16	(2.16)	-6	6
Meaningfulness	4.35	(1.53)	0	6
Retired	0.43	(0.50)	0	1
Age (years)	58.56	(5.87)	50	70
Race/Ethnicity				
White	0.70	(0.46)	0	1
Black	0.15	(0.36)	0	1
Hispanic	0.11	(0.31)	0	1
Other	0.04	(0.19)	0	1
Education Level				
Elementary	0.05	(0.21)	0	1
Some High School	0.07	(0.26)	0	1
High School	0.28	(0.45)	0	1
Some College	0.26	(0.44)	0	1
College	0.34	(0.47)	0	1
Marital Status				
Married	0.57	(0.49)	0	1
Single	0.40	(0.49)	0	1
Partner	0.03	(0.16)	0	1
Income Level				
Missing	0.05	(0.22)	0	1
Less than 10K	0.06	(0.26)	0	1
10K-20K	0.11	(0.31)	0	1
20K-35K	0.15	(0.36)	0	1
35K-50K	0.15	(0.36)	0	1
50K-75K	0.15	(0.36)	0	1
75K-100K	0.12	(0.32)	0	1
100K-150K	0.11	(0.31)	0	1
Over 150K	0.09	(0.29)	0	1
Number of Observations		5241		

Note: The reported values are the unweighted means. Standard deviations are reported in parentheses.

Table 3: Regression Results- Dependent Variable Global Life Satisfaction Using BRFSS

Independent Variables	(1) OLS	(2) IV Regression	(3) First Stage
Retired	-0.013	0.386	-
	(0.010)	(0.499)	
Age	-0.028*	0.024	0.133***
	(0.014)	(0.065)	(0.009)
Age2	0.000***	-0.000	0.001***
	(0.000)	(0.001)	(0.000)
Black	0.014	0.001	0.033***
	(0.019)	(0.026)	(0.011)
Hispanic	0.067***	0.091**	-0.059***
	(0.021)	(0.037)	(0.013)
Other	-0.074***	-0.073***	-0.003
	(0.021)	(0.022)	(0.013)
Some High School	-0.032	-0.056	0.060***
	(0.042)	(0.054)	(0.027)
High school	-0.001	-0.027	0.066***
	(0.036)	(0.050)	(0.024)
Some college	-0.009	-0.039	0.078***
	(0.036)	(0.055)	(0.024)
College	0.060*	0.038	0.054***
	(0.036)	(0.047)	(0.024)
Married	0.210***	0.216***	-0.016
	(0.016)	(0.018)	(0.010)
Divorced	0.049**	0.055***	-0.015
	(0.019)	(0.021)	(0.012)
Widowed	0.004	0.011	-0.016
	(0.028)	(0.030)	(0.019)
Separated	-0.007	0.011	-0.045*
	(0.042)	(0.050)	(0.025)
Partner	0.053	0.061	-0.020
	(0.041)	(0.045)	(0.024)
Income 15K-25K	0.131***	0.183***	-0.129***
	(0.026)	(0.070)	(0.018)
Income 25K-35K	0.196***	0.277***	-0.204***
	(0.026)	(0.106)	(0.018)
Income 35K-50K	0.255***	0.346***	-0.228***
	(0.025)	(0.117)	(0.017)
Income >50K	0.379***	0.521***	-0.356***
	(0.024)	(0.180)	(0.016)
Income Missing	0.296***	0.388***	-0.230***
	(0.028)	(0.119)	(0.018)
Constant	3.582***	2.270	3.405***
	(0.430)	(1.661)	(0.264)
Age 62	-	-	0.019
			(0.013)
Age 65	-	-	0.032**
			(0.015)
Observations	66,375	66,375	66,375
R-squared	0.087	0.020	0.313

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Note: Values are coefficients; states are also controlled for

Table 4: Social Security Full Retirement Ages

Year Born	Age in 2010	Full Retirement Age
1940	70	65 and 6 months
1941	69	65 and 8 months
1942	68	65 and 10 months
1943-1954	67-56	66
1955	55	66 and 2 months
1956	54	66 and 4 months
1957	53	66 and 6 months
1958	52	66 and 8 months
1959	51	66 and 10 months
1960	50	67

Source: Social Security Administration Retirement Planner

Table 5: Regression Results- Dependent Variable U-Index Using ATUS Data

Independent Variables	(1) OLS	(2) IV Regression	(3) First Stage for all ATUS Variables
Retired	0.050***	-0.052	-
	(0.012)	(0.220)	
Age	0.011	-0.003	-0.156***
	(0.019)	(0.037)	(0.028)
Age Squared	-0.000	0.000	0.001***
	(0.000)	(0.000)	(0.000)
Black	0.015	0.020	0.054**
	(0.020)	(0.023)	(0.023)
Hispanic	-0.026	-0.032	-0.053*
	(0.020)	(0.023)	(0.031)
Other	0.020	0.044	0.234***
	(0.028)	(0.058)	(0.042)
Some High School	-0.063	-0.058	0.050
	(0.039)	(0.041)	(0.049)
High School	-0.090***	-0.093***	-0.031
	(0.035)	(0.035)	(0.044)
Some College	-0.071**	-0.070**	-0.001
	(0.035)	(0.035)	(0.043)
College	-0.111***	-0.120***	-0.090**
	(0.036)	(0.039)	(0.044)
Married	-0.085***	-0.085***	-0.004
	(0.012)	(0.013)	(0.017)
Partner	-0.129***	-0.136***	-0.070
	(0.027)	(0.031)	(0.043)
Income Missing	-0.138***	-0.177*	-0.371***
	(0.035)	(0.092)	(0.047)
Income 10K-20K	-0.045	-0.055	-0.954***
	(0.032)	(0.040)	(0.037)
Income 20K-35K	-0.079***	-0.103*	-0.227***
	(0.030)	(0.059)	(0.036)
Income 35K-50K	-0.129***	-0.153**	-0.237***
	(0.030)	(0.062)	(0.037)
Income 50K-75K	-0.080**	-0.117	-0.366***
	(0.031)	(0.087)	(0.039)
Income 75K-100K	-0.116***	-0.158	-0.403***
	(0.031)	(0.096)	(0.039)
Income 100K-150K	-0.111***	-0.156	-0.435***
	(0.031)	(0.104)	(0.039)
Income >150K	-0.074**	-0.131	-0.554***
	(0.033)	(0.128)	(0.039)
Constant	0.186	0.597	4.437***
	(0.563)	(1.057)	(0.830)
Age 62	-	-	0.062*
			(0.036)
Age 65	-	-	0.092**
			(0.039)
Observations	5,241	5,241	5,241
R-squared	0.105	0.088	0.304

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: Values are coefficients; states, days, and holidays are also controlled for

Table 6: Regression Results- Dependent Variable Net Affect Using ATUS Data

Independent Variables	(1) OLS	(2) IV Regression
Retired	-0.352***	-2.867
	(0.083)	(2.100)
Age	-0.425***	-0.786**
	(0.126)	(0.336)
Age Squared	0.004***	0.008**
	(0.001)	(0.003)
Black	0.378***	0.513***
	(0.114)	(0.175)
Hispanic	0.473***	0.340
	(0.156)	(0.223)
Other	0.036	0.620
	(0.193)	(0.530)
Some High School	-0.101	0.020
	(0.298)	(0.355)
High School	0.362	0.290
	(0.273)	(0.331)
Some College	0.208	0.213
	(0.269)	(0.315)
College	0.507*	0.284
	(0.273)	(0.374)
Married	0.762***	0.759***
	(0.081)	(0.090)
Partner	0.785***	0.612**
	(0.191)	(0.267)
Income Missing	0.556**	-0.401
	(0.219)	(0.833)
Income 10K- 20K	0.195	-0.055
	(0.204)	(0.308)
Income 20K-35K	0.394**	-0.195
	(0.185)	(0.526)
Income 35K-50K	1.000***	0.388
	(0.184)	(0.551)
Income 50K-75K	0.495***	-0.437
	(0.188)	(0.814)
Income 75K-100K	0.694***	-0.334
	(0.186)	(0.883)
Income 100K-150K	0.596***	-0.512
	(0.190)	(0.940)
Income >150K	0.175	-1.225
	(0.200)	(1.186)
Constant	13.272***	23.464**
	(3.721)	(9.604)
Observations	5,241	5,241
R-squared	0.122	-0.117

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: Values are coefficients; states, days, and holidays are also controlled for

Table 7: Regression Results- Dependent Variable Meaningfulness Using ATUS Data

Independent Variables	(1) OLS	(2) IV Regression
Retired	-0.154***	-0.828
	(0.055)	(1.227)
Age	-0.283***	-0.379*
	(0.087)	(0.196)
Age Squared	0.002***	0.003*
	(0.001)	(0.002)
Black	0.284***	0.320***
	(0.091)	(0.118)
Hispanic	0.441***	0.405***
	(0.108)	(0.121)
Other	0.406***	0.563*
	(0.142)	(0.319)
Some High School	0.217	0.249
	(0.192)	(0.206)
High School	0.293*	0.274*
	(0.156)	(0.161)
Some College	0.239	0.240
	(0.155)	(0.158)
College	0.174	0.115
	(0.157)	(0.189)
Married	0.299***	0.298***
	(0.057)	(0.058)
Partner	0.442***	0.396**
	(0.147)	(0.176)
Income Missing	-0.544***	-0.800
	(0.181)	(0.508)
Income 10K-20K	-0.058	-0.124
	(0.139)	(0.189)
Income 20K-35K	-0.018	-0.176
	(0.134)	(0.321)
Income 35K-50K	0.102	-0.062
	(0.132)	(0.327)
Income 50K-75K	0.190	-0.059
	(0.134)	(0.474)
Income 75K-100K	-0.070	-0.345
	(0.146)	(0.514)
Income 100K-150K	0.004	-0.292
	(0.140)	(0.552)
Income >150K	-0.174	-0.549
	(0.144)	(0.699)
Constant	12.532***	15.262***
	(2.611)	(5.599)
Observations	5,241	5,241
R-squared	0.099	0.064

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: Values are coefficients; states, days, and holidays are also controlled for